

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 14-28 are pending in the application, with Claims 14 and 26-28 amended by way of the present amendment.

Claims 14-28 were rejected under a nonstatutory double-patenting rejection based on a judicially created doctrine grounded in public policy so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees; Claims 14, 18, 27 and 28 were rejected under U.S.C. § 102(b) as being anticipated by Ireland (U.S. Patent No. 3,474,453); Claims 15-17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ireland in view of Yanagisawa et al. (U.S. Patent No. 6,130,651); and Claims 19-25 were rejected 35 U.S.C. § 103(a) as being unpatentable over Ireland.

Claims 14 and 26-28 are amended to recite “a linear element having a first end connected to the feeding point, and a second end separated from the first end by a physical length shorter than a one-fifth wavelength” and that “the conductor piece having a length greater than 0.03λ ” Support for this amendment is found in Applicants’ originally filed specification.¹ No new matter is added.

In view of the amendment to Claims 14 and 26-28, Applicants submit the double-patenting rejection is moot. Briefly recapitulating, amended Claim 1 is directed to an antenna apparatus, comprising: a) a cavity having a cavity surface with an end portion; b) a feeding point arranged at the end portion of the cavity surface; c) a $\lambda/4$ linear element having a first

¹ Specification, page 12, lines 20-24; Figure 3B which shows the frequency band starts to increase when the length L of the conductor piece exceeds 0.02λ .

end connected to the feeding point, and a second end separated from the first end by a physical length shorter than a one-fifth wavelength; and d) a half-wave antenna element connected to the second end of the $\lambda/4$ linear element at a connecting point via a conductor piece having a conductor piece surface arranged separate from the cavity surface. The conductor piece has a length greater than 0.03λ .

Ireland describes a quarter-wave antenna.² However, Ireland does not disclose “a linear element having a first end connected to the feeding point, and a second end separated from the first end by a physical length shorter than a one-fifth wavelength” and that “the conductor piece having a length greater than 0.03λ .”

Applicants again submit there are numerous differences between the inventions recited in Claims 27-28 and the structure shown in FIG. 6 of the Ireland. Applicants request the Examiner specifically respond to the following comments which were previously provided with Applicants’ preliminary amendment filed on September 15, 2003.

Ireland discloses a continuity between metal conductor 31 and cavity 53. In comparison, there is no continuity between Applicants’ claimed elements that correspond to metal conductor 31 and cavity 53 of Ireland. More specifically, in Ireland cavity 53 is connected to half-wave element 11 by point 59, as shown in FIG. 7. Although FIG. 7 does not show it, it is clearly inferred from FIG. 6 that cavity 53 and half-wave element 11 are connected, with metal conductor 31 intervened therebetween. Therefore, in Ireland metal conductor 31 and cavity 53 are electrically connected. However, in the present invention, as is clear from FIG. 1(C), FIG. 2(B), and FIG. 5(B), the claimed metal conductor is separated from the cavity, and there is not electrical continuity between them.

² Ireland, Figure 6.

Therefore, Applicants new Claims 27-28 recite the linear element is “arranged so as not to be electrically connected to said cavity.” Applicants submit that this feature is at least one patentable difference between the teachings of Ireland and the claimed invention because, if Applicants’ linear element is electrically connected to the cavity, the antenna will not function. This is because the antenna of the present invention operates by a capacitance held between the cavity and the linear element. If Applicants’ linear element and the cavity are electrically connected, there will be no capacitance between them, and the antenna will not work. Similarly, the half-wave element and the conductor piece of the claimed invention also cannot be connected to the cavity.

Applicants’ Claim 28 also recites the limitation of “a ground terminal of the feeding point is connected to the cavity.” In Ireland, if the cavity is connected to the ground terminal of the feeding point, the antenna of Ireland will be shorted and will not work. Ireland teaches a structure in which a capacitance formed by a cavity is loaded in series between the feeding point and the half-wave element. In this structure, if the cavity *is connected* to the ground terminal, the feeding point is short-circuited to the ground terminal through the cavity, and thereby Ireland’s antenna does not work. In contrast, in the antenna of the present invention, if the cavity *is not connected* to the ground terminal of the feeding point, no capacitance is generated between the conductor piece and the ground terminal, and Applicants’ antenna will not work. In other words, in the antenna of Ireland, a potential difference can be applied between the cavity (which is connected to the feeding line) and the half-wave element. Thus a capacitance is generated therebetween, as shown in Ireland’s FIG. 8. In contrast, with the configuration of Applicants’ claimed invention, a potential difference can be applied between the conductor piece (which is connected to the feeding line) and the cavity connected to the ground terminal of the feeding point. Thus, in Applicants’ claimed invention a capacitance can be generated therebetween, as shown in FIG. 2C, thereby improving performance.

The structures recited in Applicants' Claims 27-28 (as well as Claim 14) provide numerous advantages over the conventional art to include the suppression of unnecessary current flowing on the cavity. This suppression exists because a current feedback path is formed between the capacitance and the feeding point as shown in FIG. 2C, thus current leakage to other portions of the cavity is suppressed. The structure of Ireland does not produce such a suppression effect.

MPEP § 2131 notes that "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "When a claim covers several structures or compositions, either generically or as alternatives, the claim is deemed anticipated if any of the structures or compositions within the scope of the claim is known in the prior art." *Brown v. 3M*, 265 F.3d 1349, 1351, 60 USPQ2d 1375, 1376 (Fed. Cir. 2001) (claim to a system for setting a computer clock to an offset time to address the Year 2000 (Y2K) problem, applicable to records with year date data in "at least one of two-digit, three-digit, or four-digit" representations, was held anticipated by a system that offsets year dates in only two-digit formats). See also MPEP § 2131.02. "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Because Ireland does not disclose or suggest all the features recited in Claims 14 and 26-28, Ireland does not anticipate the invention recited in Claims 14 and 26-28, and all claims depending therefrom.

Applicants have also considered Yanagisawa and submit Yanagisawa does not cure the deficiencies of Ireland. Accordingly, in view of the present amendment and in light of the previous discussion, Applicants respectfully submit that the present application is in condition for allowance and respectfully request an early and favorable action to that effect.

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Accordingly, in view of the present amendment and in light of the previous discussion, Applicants respectfully submit that the present application is in condition for allowance and respectfully request an early and favorable action to that effect.

Respectfully submitted,

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